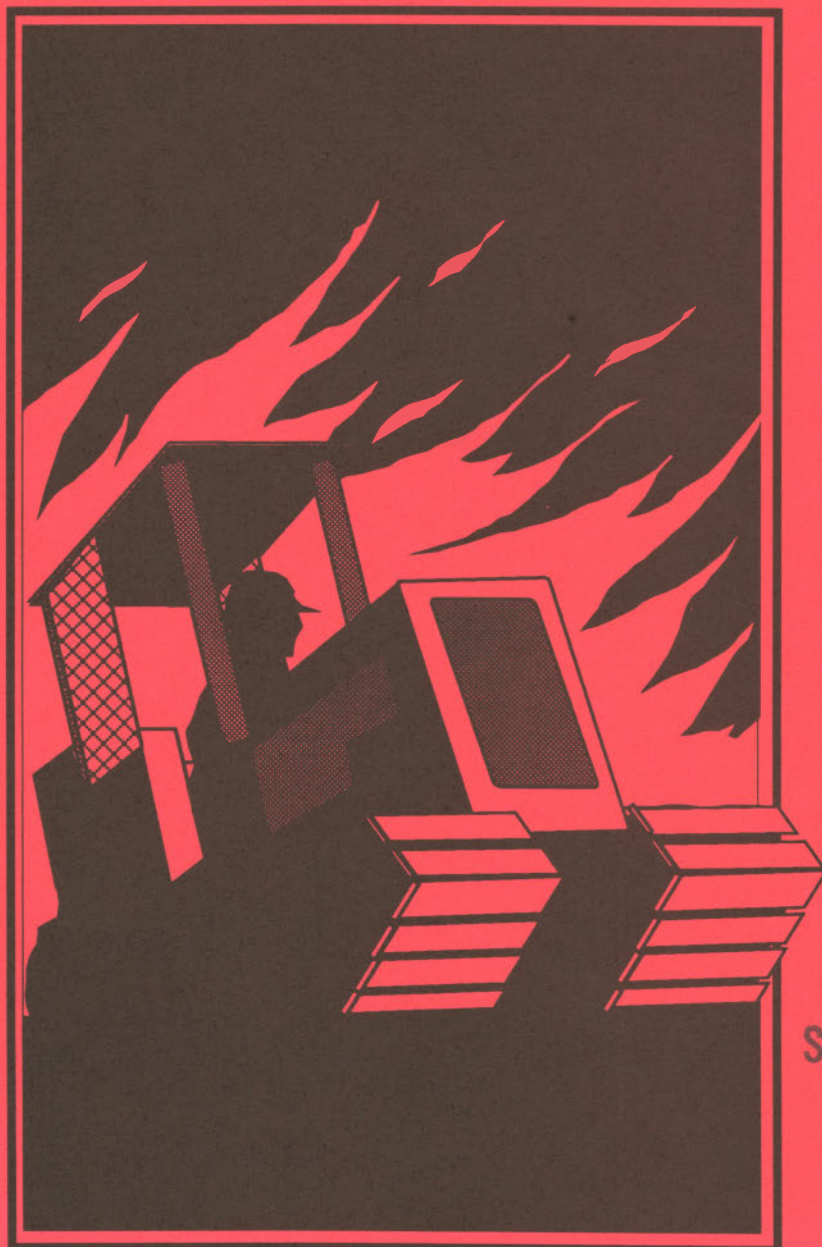


F7623
2.W45
Copy 1

South Carolina **WILDFIRE**



S. C. STATE LIBRARY

AUG 9 1999

STATE DOCUMENTS

Produced by the South Carolina Forestry Commission, 1994.

WILDFIRE



Any forest fire, brush fire, grass fire, or any other outdoor fire that is not controlled and supervised is called a **wildfire**. These fires cause damage to the forest resource as well as wildlife habitat, water quality, and air quality.

Of increasing concern is the threat wildfires pose to homes and lives in South Carolina. Wildfires burn 20-30 homes in the state every year, and hundreds more are threatened each fire season. Because these situations are becoming more common in our state, it is important for citizens and firefighters alike to understand the nature of wildfire.

FACTS ABOUT WILDFIRE IN SOUTH CAROLINA

Average number of fires per year: 5-6000*. Considering the size and population of SC, this is one of the highest rates in the nation.

Average area burned each year: 30,000* acres.

Largest fire on record is a 30,000 acre blaze in Horry County in 1976.

*includes only fires handled by the Forestry Commission.

FIRE CAUSES

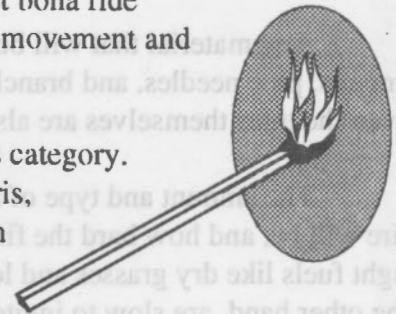
South Carolina does not use a uniform fire reporting system, so there are no complete statistics on fire occurrence or fire causes. The statistics in this section are compiled from Forestry Commission records; they do not include the many fires handled entirely by the Fire Service and forest industry.

Lightning. Only about 2% of our wildfires are attributed to lightning. This is because we usually get rain along with thunderstorms. Also, high summertime humidities in the southeast help reduce the number of ignitions from lightning strikes.

Campfires. This class accounts for 1-3% of SC wildfires. Most outdoor activity is in the summertime, and there is less chance of ignition from campfires when the vegetation is green and humidity is high.

Smoking. Careless smoking is blamed in 4-5% of the total wildfires in the state. This may be an inflated figure due to errors in cause determination. Unless the humidity is very low, a dropped cigarette is unlikely to kindle a new fire. Most bona fide smoking fires occur along high speed highways where traffic movement and reflected heat create a microclimate.

Debris Burning. Any planned fire that escapes falls into this category. It includes wildfires originating from burning trash, yard debris, construction waste, land clearing piles, crop stubble, and from prescribed burning for forestry or wildlife management purposes. On an annual basis, 30-35% of our wildfires fall into this cause category.





Woods Arson. Fires set to burn someone else's property without the owner's consent account for 40-45% of all wildfires in SC. State law recognizes two types of incendiary fire: willfull and malicious, and intentional fires. Willfull and malicious fires are set with malicious intent or with the knowlege that the fire may cause damage. Revenge, malicious mischief, and thrill-seeking are common motives.

Intentional fires are those set to burn someone else's property with no intent to cause damage. An example is when someone living close to a forest sets it on fire to get rid of vermin, clear out brush, etc. To that person, the burning is actually desirable; it becomes arson because the property owner did not order or approve the fire.

Equipment Use. Usually around 5% of our fires originate with faulty equipment. These include fires started by farm equipment and hot catalytic converters on automobiles.

Railroad. Only 1-2% of SC wildfires are caused by railroad operations. With the advent of efficient diesel engines, this cause is no longer significant. Most railroad fires result from braking or sparks from a carbon build-up in the engines.

Children. The activities of children cause 3-5% of our wildfires. Most of these result from unsupervised use of fireworks, matches, and lighters.

Miscellaneous. This catchall category includes such things as irresponsible use of fireworks by adults, structure fires which ignite nearby woods, and unattended warming fires. Around 4-6% of SC wildfires are reported in this category.

FIRE SEASON

Forest fire danger is usually highest in late winter and early spring (January through mid-April). March is frequently the busiest month for firefighters, but some of the largest fires have occurred during the first two weeks of April.

South Carolina's fire season is in the winter because most vegetation is dead or dormant during that time. Fires do not start or spread as quickly when vegetation is green.

FOREST FUELS

Any material that will burn is **fuel**. Forest fuels usually consist of dead leaves, grasses, pine needles, and branches on the ground. Brush, shrubs, fallen logs, and sometimes even the trees themselves are also considered fuel.

The amount and type of available fuel influence how fast a fire burns, how hot the fire will be, and how hard the fire will be to control. Fire will move very quickly through light fuels like dry grasses and loose pine straw, consuming them quickly. Heavy logs, on the other hand, are slow to ignite but burn for a long period of time.

FIRE WEATHER



Weather is a much more important factor in dealing with wildland fire than it is with structural fire. Wildland firefighters must consider the wind, relative humidity, and the length of time since the last precipitation.

Wind is an important factor in wildfire management. The speed with which a fire spreads outdoors is often dependent on the wind. Wind also helps dry the forest fuels, making them more flammable.

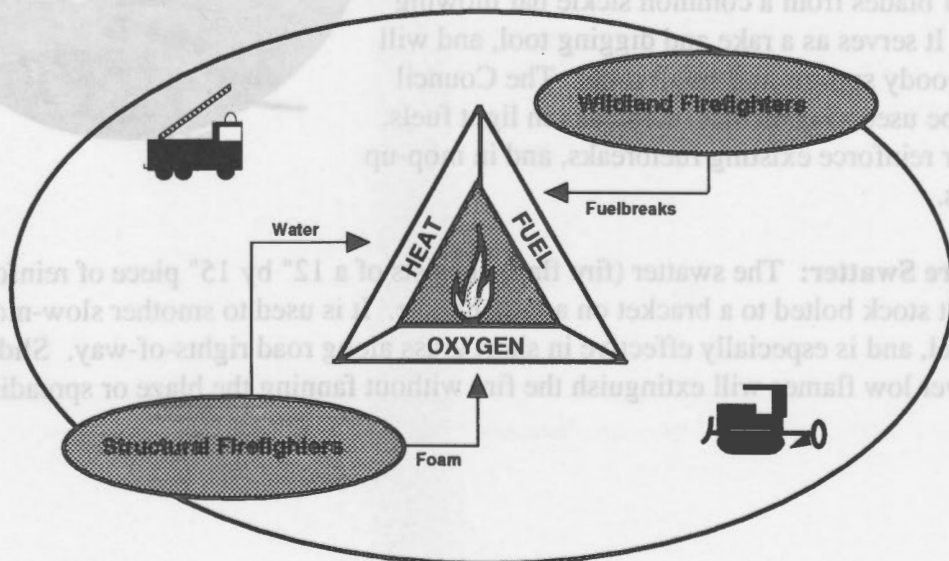
Relative humidity is a measure of moisture in the air. If the humidity is 100%, the air is completely saturated with moisture. If the humidity is less than 20%, the air is very dry. When the air is dry, it absorbs moisture from the fuels in the forest making them more flammable.

Fires start readily during periods of low humidity. Even a small heat source, like a spark from an existing fire, can start a new blaze.

Forest fuels absorb moisture from rain, snow, and even from the air. Damp fuels ignite and burn slowly, so wildfires are unlikely immediately after precipitation has fallen. Very light fuels like dead grasses, leaves and pine straw will dry out quickly after a rain, especially if the wind is blowing and the humidity is low. The moisture content of heavy fuels (logs, large branches) changes much more slowly.

WILDLAND FIREFIGHTING

Remember the fire triangle? Structural firefighters usually attack fires with water to reduce the heat, or with foam to cut off the fire's supply of oxygen. Wildland firefighters most frequently attack the fuel side of the triangle, removing flammable material from the path of the fire.



WILDFIRE



A strip of ground from which the fuel has been removed is called a **firebreak** or **fuelbreak**. The width of the break depends on the type of fuel in which the fire is burning and the weather conditions. (A wider break might be needed when the wind is blowing very hard; a narrow break might suffice when the fire is burning slowly in damp fuel.)



Standard equipment for wildland firefighting throughout most of the southeast is a crawler tractor equipped with a heavy plow and/or a blade. Tractors assigned to the lowcountry are frequently equipped with wide tracks to enable them to operate in boggy terrain. These are referred to as *high flotation* or *low ground pressure* units.

Some firefighting situations still require the use of hand tools. Steep, mountainous terrain precludes the use of heavy equipment, so fuelbreaks must be constructed by hand; hand tools are often the most practical means of suppressing small roadside fires and mopping up large fires.

The hand tools most commonly used in South Carolina are the Council tool (fire rake), the fire swatter or flap, the backfire torch, and the round point shovel. A firefighter's effectiveness using hand tools depends on selecting the right tool and knowing how to use it.

Council Tool: A favored tool of many southern firefighters, this long-handled rake is constructed of blades from a common sickle bar mowing machine. It serves as a rake and digging tool, and will also cut woody sprouts and small roots. The Council tool may be used to construct fuelbreaks in light fuels, to clean or reinforce existing fuelbreaks, and in mop-up operations.

Fire Swatter: The swatter (fire flap) consists of a 12" by 15" piece of reinforced rubber belt stock bolted to a bracket on a long handle. It is used to smother slow-moving fire in light fuel, and is especially effective in short grass along road rights-of-way. Sliding the swatter over low flames will extinguish the fire without fanning the blaze or spreading sparks.

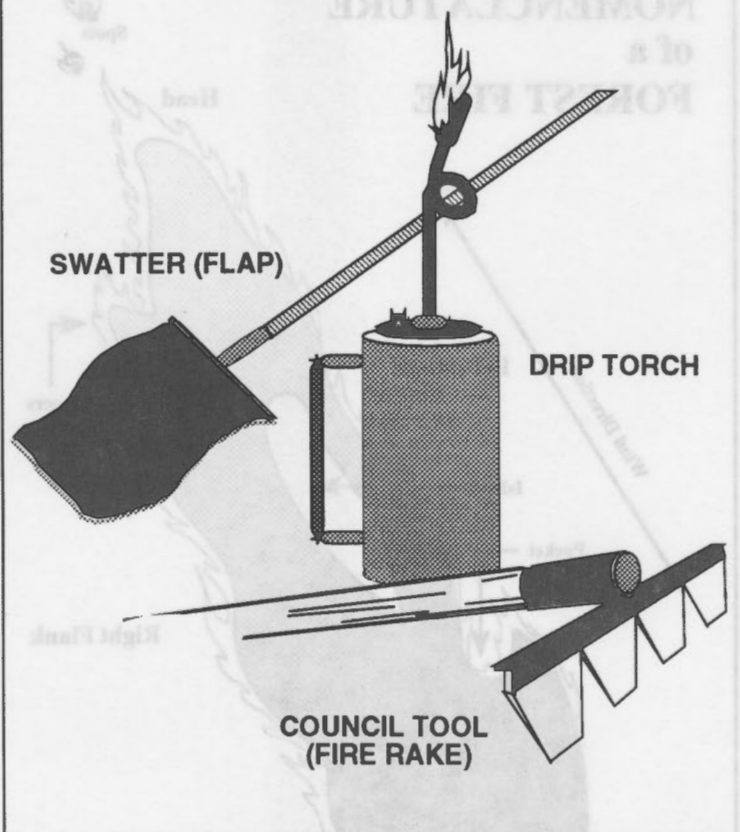




Backfire Torch: This tool, sometimes called a drip torch, consists of a fuel cannister to which is attached a long tube. At the end of the tube is a wick-like burner. The fuel is fed through the tube by gravity, igniting as it passes the burning wick. The fuel continues to burn as it drops, igniting the leaves, grass, or pine straw on the ground. The cannister is filled with a mixture of 2/3 diesel fuel and 1/3 gasoline.

The backfire torch is used to widen fuelbreaks by burning out fuels between the break and the oncoming fire. It is widely used in mop-up operations to burn out pockets of fuel remaining adjacent to control lines after a wildfire is contained.

WILDLAND FIREFIGHTING HAND TOOLS



Round Point Shovel: This is perhaps the most versatile of the hand tools, as it can be used to dig, rake, scrape, cut, and throw dirt. Many wildland firefighters sharpen one or both edges of the shovel to improve its cutting ability; as a safety consideration, some right-handed firefighters sharpen only the left edge of the shovel.

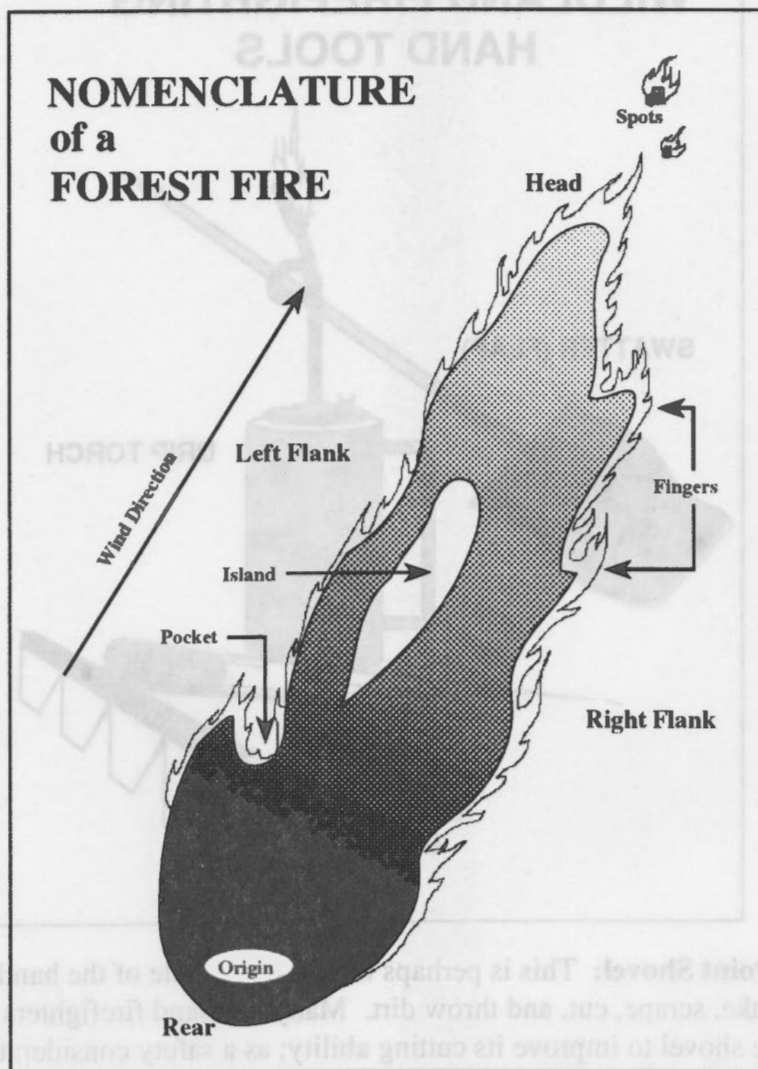
When constructing or improving fuelbreaks, the shovel is used to dig or rake fuel away, leaving mineral soil exposed. The cutting edge can be used to clear light brush. In mop-up operations, the shovel can be used to extinguish flames on tree trunks and stumps by slapping dirt onto the burning surface. In a pinch, the shovel may be employed like a swatter to smother low flames.



NOMENCLATURE OF A FOREST FIRE

The fastest-moving, hottest, and most dangerous part of a wildfire is called the **head**. Since this is the portion of the fire that causes the most damage, firefighters try to stop the head first. On large fast-moving fires, several firefighters may plow side by side to create a firebreak wide enough to stop the head.

When the forward progress of the fire is stopped, firefighters construct firebreaks that completely surround the fire. When this is done, the fire is said to be **contained**. Firefighters then reinforce their breaks and put out any dangerous hot spots that remain. This process is called **mop-up**. Only after mop-up is complete can the fire be classified as **controlled**.



AIR OPERATIONS

Over the past twenty-five years, South Carolina wildland firefighters have come to depend heavily on aircraft. On large fires in particular, the aerial observer's overall view of the fire scene can provide valuable information to the firefighter on the ground. Through radio communication, the aerial observer supplies ground crews with information on access,

fire location and behavior, fire size, degree of containment, and breakovers. The airplane also provides a safety function, advising the firefighter of possible danger situations and escape routes.



Light planes have proved to be so effective in finding forest fires that the Forestry Commission has discontinued the use of lookout towers. In addition to detecting the fires, aerial observers evaluate the severity of each fire and provide information necessary to determine the type of response that is needed.

Aerial tankers and helicopters are not really cost-effective on most South Carolina wildfires. The Forestry Commission seldom needs these tools, but they are available from other sources should special situations arise.

FIREFIGHTER SAFETY

Wildland firefighters can't operate effectively in the heavy turn-out gear used by Fire Departments. Instead, they wear fire retardant clothing, hard hats, safety goggles, and carry a tent-like portable fire shelter.

The heat-reflecting fire shelter is used when a firefighter is trapped by a fast-moving fire. In a matter of seconds, a trained firefighter can open the shelter and get inside until the fire passes.

Firefighters working on foot carry the fire shelter in a pouch on their belt. Shelters for tractor operators are stored in a quick release container mounted inside the cab of the tractor. Tractors are also equipped with a heat reflecting curtain above each door. In case a fire suddenly flares up and threatens to throw flame into the cab, the firefighter can use the curtain for protection until he can move away from the fire.

Tractor-plow firefighting is rated as one of the most dangerous fire management activities. South Carolina's safety record is enviable, with only three firefighting fatalities on record. No Forestry Commission firefighter has ever been killed by a wildfire.

WILDLAND FIREFIGHTING RESPONSIBILITY

By law, the South Carolina Forestry Commission is responsible for wildland fire protection outside of corporate town or city limits. The Forestry Commission gratefully acknowledges the excellent firefighting assistance provided by rural fire departments, forest industry, and other agencies



WILDFIRE



FIRE PROTECTION LAWS

South Carolina law regulates outdoor burning in unincorporated areas. Except within town or city limits, anyone planning to burn outdoors must:

- 1) notify the Forestry Commission before starting the fire
- 2) clear a firebreak around the area to be burned
- 3) have adequate tools, equipment, and personnel on hand to control the fire
- 4) stay with the fire until it is completely safe.



Violation of this law is punishable by fines of up to \$100.

It is also against the law to allow a fire to escape and burn someone else's property. Conviction under this law is punishable by fines of up to \$200. The person responsible for the fire may also be sued for damages in civil court.



Woods arson is deliberately setting someone else's woodland on fire without the owner's permission. It is a serious crime. Depending on the circumstances, a woods arsonist may be fined up to \$5000 or sentenced to five years in prison.

The Arson Hot Line (1-800-92-ARSON) is a confidential way for citizens to report any arson incident, including woods arson. Sponsored by the Independent Insurance Agents of South Carolina and administered by the State Law Enforcement Division, the Hot Line pays cash rewards for information leading to an arrest and indictment.

When the threat of wildfire approaches dangerous levels, the Forestry Commission may issue a special warning called a Red Flag Fire Alert. A Red Flag Alert does not prohibit burning; it is a public warning that outdoor burning could be more dangerous than normal. Usually the Red Flag is accompanied by a suggestion to postpone burning until the fire danger decreases.



The Governor or the State Forester may issue a legal ban against certain types of burning when fire danger becomes critical. When such a ban is in effect, anyone starting fires covered by the ban is subject to a \$100 fine.

The Forestry Commission has trained and duly commissioned law enforcement officers to enforce the forest protection laws. These officers are equipped with weapons, handcuffs, and other law enforcement gear and have full power of arrest under South Carolina law.

FIRE PREVENTION



Wildfire prevention is a combination of education, law enforcement, and hazard reduction. The Forestry Commission and the Fire Service handle the first two, but individuals can play a big part in the third.

Woodland owners should establish a network of permanent fuelbreaks and access roads around and through their forested land. In some cases, natural fuel accumulations may be removed periodically through **prescribed burning**. This should be done only by trained fire managers under carefully selected weather and fuel conditions. When applied properly, prescribed fire does not damage the forest and is beneficial to such wildlife species as deer, quail, and rabbits.

Persons living in or adjacent to forests, grassland, or brushland should inspect their homes for wildfire hazards and take appropriate precautions. Additional guidelines for home protection are provided in the Forestry Commission's brochure and video productions entitled, *Your Home In The Line of Fire*.



is your home
safe from

WILDFIRE?

The SC Forestry
Commission and
your local fire
department urge
you to inspect
your home and
grounds for fire
hazards.

- ☐ Adequate access for firefighting equipment
- ☐ Adequate local water supply
- ☐ Driveway clearly marked with address
- ☐ Crawl space enclosed
- ☐ Vents screened
- ☐ Eaves boxed
- ☐ Spark arrestors on chimney
- ☐ Roof clear of pine straw and leaves
- ☐ Adequate outdoor faucets and water hose
- ☐ Wood siding and shingles treated with fire retardant
- ☐ No branches overhanging house
- ☐ No flammables stored under or against house
- ☐ Foundation clear of volatile plants and mulch
- ☐ Fuelbreaks on downslope side of steep lots
- ☐ Adequate breaks in tree canopy near house
- ☐ Brush cleared within 50' of house

Publication Data
Another Printer
\$300-500-\$.60

WILDFIRE